REMARKS

Applicant is in receipt of the Office Action mailed June 6, 2005. Claims 19-22, 29, 46, 59, 69, 76, and 85 have been amended. Claims 1-88 are pending in the case. Reconsideration of the present case is earnestly requested in light of the following remarks.

Information Disclosure Statement

Per CFR 1.97, Applicant has re-submitted the IDS of January 3, 2005 as a submission for a Request for Continued Examination included herewith.

Claim Amendments

Claims 19-22 were amended to correct dependencies. Claims 29, 46, 59, 69, 76, and 85 were amended to clarify the scope of the invention, specifically, to emphasize the fact that the program is executable or executed on the computer system for debugging purposes, in consonance with the system claims.

Section 103 Rejections

Claims 1-88 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,603,034 to Taylor et al. (hereinafter, "Taylor"). Applicant respectfully disagrees, and in addition to the arguments provided in the previous Response, which is hereby incorporated by reference, Applicant presents the following:

Claim 1 recites:

1. A system for debugging a program which is intended to execute on a reconfigurable device, the system comprising:

a reconfigurable device, comprising:

a programmable hardware element; and

one or more fixed hardware resources coupled to the programmable hardware element; and

a computer system comprising a processor and a memory;

wherein the computer system is coupled to the reconfigurable device;

wherein the memory stores the program specifying a function, wherein the program is convertible into a hardware configuration program which specifies a configuration for the programmable hardware element that implements the function, and wherein the hardware configuration program further specifies usage of the one or more fixed hardware resources by the programmable hardware element in performing the function;

wherein the programmable hardware element is further configurable with a test feed-through configuration, wherein, after configuration with the test feed-through configuration, the programmable hardware element provides for communication between the program and the one or more fixed hardware resources; and

wherein, for debugging purposes, the program is further executable by the processor of the computer system to test performance of the function including the usage of the one or more fixed hardware resources.

The Examiner asserts that Applicant's claims do not recite "debugging the program on the host computer system". While this exact quote may not appear in the independent claims, Applicant notes that claim 1 (for example) does recite:

"A system *for debugging a program which is intended to execute on a reconfigurable device*"

and

"wherein, for *debugging purposes, the program is further executable by the processor of the computer system to test performance of the function including the usage of the one or more fixed hardware resources*".

Applicant respectfully submits that the claim clearly indicates that the program is intended for deployment to a programmable hardware element with fixed hardware resources coupled thereto, and that the program is debugged on the computer system. Applicant notes that the Examiner's phrase "debugging the program on the host computer" is a method element, and that this particular wording is not appropriate for a

system claim, e.g., claim 1. The above argument also applies to independent system claims 16 and 23, as well as amended independent claims 29, 46, 59, 69, 76, and 85.

Thus, Applicant respectfully submits that all the independent claims as currently written specifically include the limitation that the program, intended for execution on the programmable hardware element, is executed (or executable) on the computer system for debugging purposes, specifically, to test performance of the function including the usage of the one or more fixed hardware resources, and communicates (or is operable to communicate) with the fixed hardware resources via the programmable hardware element configured with the test feed-through configuration. Applicant further submits that Taylor nowhere discloses this limitation, and that since the original independent (system) claims clearly included this limitation, a new search by the Examiner (beyond the IDS references submitted herewith) is not required.

Applicant respectfully submits that the Examiner has improperly equated various features and limitations of claim 1 with aspects of Taylor's system that are not, in fact, the same. For example, the Examiner asserts that Taylor discloses a program that is convertible into a hardware configuration program for deployment to a programmable hardware element, and further asserts that Taylor discloses "wherein, for debugging purposes, the program is further executable by the processor of the computer system to test performance of the function including the usage of the one or more fixed hardware resources".

However, for support of the second quoted limitation the Examiner has cited Taylor col. 11, lines 1-5, specifically stating "In general operation, the S-bus can be used to monitor the status or data (test performance including usage of hardware resources) in any connected DSP". Applicant respectfully submits that Taylor's described use of the S-bus in no way teaches this limitation. In Taylor's system, the program that executes on the host computer (and communicates with the hardware resources) is intended to execute there, in direct contradistinction to the program of claim 1. That such a program may communicate with hardware, such as DSPs, e.g., "to monitor the status or data" in no way indicates or implies that the program is itself intended for execution on a programmable hardware element, and is executable on the host computer (for debugging purposes) to

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test performance *of the function including the usage of the one or more fixed hardware resources*. Moreover, Applicant notes that according Taylor's program, which may include some portions intended for execution on a host computer and other portions intended for execution on PLDs, is debugged by traditional means on the host computer (see col. 21, line 65 – col. 22, line 5), then deployed to the respective execution platforms, including hardware resources, such as DSPs. Nowhere does Taylor teach or suggest debugging the program on the host computer including communicating with hardware resources through a suitably configured (i.e., with a test feed-through configuration) programmable hardware element (e.g., PLD). Rather, as argued previously, once the program has been debugged by traditional means (i.e., on the host computer), any further debugging occurs after the program (or a portion of the program) has been converted to one or more hardware configuration files and deployed to respective one or more reconfigurable hardware devices. In other words, in Taylor's system, once the program is developed and debugged via traditional methods, the program is converted and deployed to various hardware resources, e.g., PLDs, DSPs, etc., where further debugging, e.g., of the hardware resources, can then be performed. Taylor neither teaches nor suggests debugging the program on the host computer system where the program communicates with fixed hardware resources through a programmable hardware element configured with a test feed-through configuration. Applicant respectfully notes that a primary objective of Applicant's invention is to facilitate debugging (on the computer system) of a program intended for execution on a programmable hardware element, where the program communicates with the fixed hardware resources *while the program is being debugged*. Taylor nowhere teaches or suggests this functionality.

As another example, the Examiner appears to have equated Applicant's debugging of the program, e.g., executing on the computer system *to test performance of the function including the usage of the one or more fixed hardware resources*, with Taylor's monitoring and debugging of the hardware, which is not at all the same.

Thus, Applicant respectfully submits that the Examiner has mischaracterized Taylor and improperly assumed features that are not in fact disclosed by Taylor.

Regarding the Examiners arguments regarding motivation to modify Taylor, in addition to the arguments provided in the previous Response (which Applicant submits are still valid), Applicant notes that the Examiner's suggested motivation, "because simulating connected hardware peripherals is important when debugging software that is to be convertible into a hardware configuration program" is not germane to the subject matter of claim 1, since claim 1 does not include simulating connected hardware peripherals. Thus, the suggested motivation to modify Taylor is improper, and cannot properly be used to support a 103 rejection.

Applicant respectfully submits that Taylor fails to teach or suggest all the features and limitations of claim 1. Thus, for at least the reasons provided above, Applicant submits that claim 1 and those claims dependent therefrom are patentably distinct and non-obvious over Taylor, and are thus allowable.

Claims 16, 23, 29, 46, 59, 69, 76, and 85 include similar features and limitations as claim 1, and so the above arguments apply with equal force to these claims. Thus, Applicant respectfully submits that claims 16, 23, 29, 46, 59, 69, 76, and 85, and those claims respectively dependent therefrom, are patentably distinct and non-obvious over Taylor, and are thus allowable.

Removal of the 103 rejection of claims 1-88 is respectfully requested.

Applicant also asserts that numerous ones of the dependent claims recite further distinctions over the cited art. However, since the independent claims have been shown to be patentably distinct, a further discussion of the dependent claims is not necessary at this time.

CONCLUSION

In light of the foregoing amendments and remarks, Applicant submits the application is now in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5150-63400/JCH.

Also enclosed herewith are the following items:

☒ Return Receipt Postcard

☒ Request for Continued Examination

☒ Information Disclosure Statement

Respectfully submitted,

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